49-3-13/16

On the relation between the changes in amplitude and phase
of the electric field and the elements of a magnetic
polarisation ellipse. (Cont.)

this paper the author made an attempt at interpreting the
observed results without the necessity of reverting from
the ratios to integral values of the field.
Note: In a paper which the same author read at a conference
in December, 1956 (six months after submitting this paper
for publication) he outlined the assumptions for utilising
the polarisation ellipse of the electromagnetic field for
practical solution of certain problems. In the magnetic
ellipse two non-coincident directions are determined, the
physical interpretation of which leads to the determination
of the magnitude and the direction of decrease in amplitude
and phase of the electric field. He found a justification
for the assumption that there is a separate existence of
amplitude and phase anomalies on certain types of deposits.
He evaluated the error of field measurement associated with
the elliptical polarisation of the field and proposed and
justified a new method of phase and amplitude calibration
of apparatus in the polarisation ellipse. The method was
Card 2/3   tested under field conditions and approved by the State
Commission of the Ministry of Geology and Minerals Resources.

49-3-13/16

On the relation between the changes in amplitude and phase of the electric field and the elements of a magnetic polarisation ellipse. (Cont.)

There are 2 figures and one Slavic references.

SUBMITTED: June 2, 1956.

ASSOCIATION: Ac.Sc., U.S.S.R., Institute of Physics of the Earth. (Akademiya Nauk SSSR Institut Fiziki Zemly).

AVAILABLE: Library of Congress

Card 3/3

BARSUKOV, O. M.

AUTHOR: Kirillov, F.A.

49-3-15/16

TITLE: Conference of junior reserach workers, engineers and aspirants of the Institute of the Physics of the earth, Ac. Sc., U.S.S.R. (Konferentsiya mladshikh nauchnykh sotrudnikov, inzhen rov i aspirantov Instituta Fiziki Zemli AN SSSR).

PERIODICAL: "Izvestiya Akademii Nauk, Seriya Geofizicheskaya" (Bulletin of the Ac. Sc., Geophysics Series), 1957, No. 3, pp. 411-415 (U.S.S.R.)

ABSTRACT: The conference was held December 24-26, 1956, 21 papers were read relating to work completed in 1955 and 1956. In this report the contents of the individual papers are briefly summarised. O.M. Barsukov read the paper "Certain Problems of the Method of Measurement in an Elliptical Polarised Electro-Magnetic Field".

R H R S U K O V (M).

AUTHOR: Barsukov, O. M.   49-4-14/23

TITLE: Graduation of amplitude-phase electric prospecting apparatus.
(Graduirovka amplitudno-fazovoy elektrorazvedochnoy
apparatury).

ABSTRACT: Methods of producing sinusoidal scale graduations
described in literature (Refs.1 and 2) are applicable only
for amplitude calibration of apparatus. In this paper a
method is described which is sufficiently reliable and
fully applicable for use by field teams using amplitude-
phase apparatus. During a period the end point of the
vector of the potential of the magnetic or the electric
components in observation points describes an ellipse
(Fig.1). According to the author (Ref.3) the relations,
Eqs.1 and 2, apply and these equations were used as a
basis for the proposed method of graduation of amplitude-
phase apparatus. A particular case of the described
method of graduation is the phase graduation only of an
instrument. The method was tested under field conditions;
S. M. Sheynman, P. I. Vasil'yev, I. A. Velikina and others
Card 1/2 assisted in these tests.

49-4-14/23

Graduation of amplitude-phase electric prospecting apparatus.

There are 1 figure and 3 Slavic references.

SUBMITTED: November 1, 1956.

ASSOCIATION: Ac.Sc. U.S.S.R. Institute of Physics of the Earth.
(Akademiya Nauk SSSR Institut Fiziki Zemli).

AVAILABLE: Library of Congress.

Card 2/2

Barsukov, O.M.

AUTHOR: Barsukov, O.M.

TITLE: Selection of a Method of Measuring the AC Electromagnetic Field (O vybore sposoba izmereniy peremennogo elektromagnitnogo polya)

PERIODICAL: Izvestiya Akademii Nauk SSSR, Seriya Geofizicheskaya, 1958, nr 3, pp.365-369 (USSR)

ABSTRACT: Use of an infinitely long cable or an equivalent non-grounded loop as a source of an electromagnetic field is widely applied in AC electric prospecting work and a large number of methods for such measurements have been described in literature. V.R. Bursian (Ref.1) carried out theoretical calculations of the normal field of an infinite cable and published his results in the form of tables of real and imaginary parts of the magnetic components. A similar calculations for fields which are due to non-uniformities brings about the necessity of considering anomalies as the difference between the measured and normal fields. Such a procedure can be quite complicated if phase magnitudes are taken into consideration and give a definite physical conception of the objects which bring about a disturbance. The character of disturbance of the field will in a number of cases

Card 1/3

Selection of a Method of Measuring the AC Electroma...

conducting and nonconducting inclusions as w...
...acts of formations with differing conductivi...
ti.n on the phase and amplitude iso surfac...
potential near the surface of the ground c...
measuring simultaneously the polarisati...
magnetic and of the electric components of ...
point of the metering plane. Under numer...
geophysical conditions solution of electric ...
problems may require frequently a prelimin...
the normal field to be anticipated and which ...
ground of the anomalies caused by nonunifo...
geological structure. The data of the value...
field of an infinite cable given in Table ...
for such an evaluation and also for solving ...
Graphs of the dependence of the inclination...
the major axis of the polarisation ellipse ...
field relative to the horizon on the magnit...
distances from the supply cable are given ...
graphs can be used for solving the problem...
of the apparent specific resistance of a ...

Card 2/3

Selection of a Method of Measuring the AC Electrom... ... ...

laminated media on the frequency, distance, ... This assumption permits also to determine the minimal spacing between the electrodes necessary for generating a field of an infinite cable with grounded systems and to solve the problem of the frequency dependence of the specific resistance in a uniform field. The inclination angle of the polarisation ellipse does not depend on the current intensity in the cable and can be measured with a high accuracy by an instrument with a single moving coil. There are 2 tables, 3 figures and 6 references, of which 4 are Russian and 2 English.

ASSOCIATION: Academy of Sciences of the USSR, Institute ... ... of the Earth (Akademiya nauk SSSR, Institut Fiz... ... ...)

SUBMITTED: April 22, 1958.

AVAILABLE: Library of Congress.

Card 3/3

AUTHOR: Barsukov, O.M.   SOV/49-58-8-13/17

TITLE: Variations in the Preferred Direction and Average Amplitude
            of Short-period Oscillations of Telluric Currents
            (Variatsii preimushchestvennogo napravleniya i sredney
            amplitudy korotko-periodicheskikh kolebaniy telluricheskikh
            tokov)

PERIODICAL: Izvestiya Akademii Nauk, SSSR, Seriya Geofizicheskaya,
            1958, Nr 8, pp 1040 - 1043 (USSR)

ABSTRACT: In the complex of different variations which occur in
          terrestrial currents, it is natural to select those which
          show some sort of regularity. The existence of long-period
          amplitude variations (with a period of a day to several
          years) has been sufficiently verified. Short-period
          oscillations (with a period of several minutes) have aroused
          much interest lately, but it is difficult to work out the
          course of this variation owing to the interaction between
          long- and short-period variations (Refs 1, 2). V.A.
          Troitskaya (Ref 2) showed that oscillations with an almost
          constant amplitude and a period of tens of seconds,
          continuing for several hours without break, were observable

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SCV/49-58-8-13/17

Variations in the Preferred Direction and Average Amplitude of
Short-period Oscillations of Telluric Currents

from 22 - 12 hours Universal Time, whilst oscillations with
a period of several minutes appeared from 12 - 24 hours.
The harmonic analysis of a large number of tellurograms,
which is essential in obtaining a large quantity of statis-
tical material, contains many technical difficulties.
Attempts to study the variations in short-period oscill-
ations were made at the beginning of the IGY in order to
obtain a quantity of material from different stations,
using the same equipment at the same time. The present
article is an interim survey of the course taken by short-
period oscillations of the type described.
The tellurograms were divided into time intervals of
3.32 mins each and the trace range in this interval
(R_n^E for the Eastern and R_n^N for the Northern, component
of the field intensity in mV/km) was measured.
After averaging over every hour:

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SOV/49-58-8-13/17

Variations in the Preferred Direction and Average Amplitude of
Short-period Oscillations of Telluric Currents

$$\frac{1}{m} \sum_{n=1}^{m} R_n^E = A^E \; , \quad \frac{1}{m} \sum_{n=1}^{m} R_n^N = R^N$$

(m is the number of intervals in the hour), the quantities
R^E and R^N were averaged over all the days (separately
for each hour).

$A = \sqrt{(R^E)^2 + (R^N)^2}$ gives the amplitude and

$R^E/R^N = \cot \varphi$ gives the azimuthal angle for oscillations
with periods close to/that considered.
Figure 1 has co-ordinate axes (representing R_n^N and R_n^E)
in which are drawn the instantaneous values of the vectors
AB (with period T_1) and OF with period T_2 $(T_1 < T_2)$.
For a time Δt , close to T_1 $(\Delta t > T_1)$, AB moves
along OF . The end of the total vector describes a

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SOV/49-58-8-13/17

variations in the Preferred Direction and Average Amplitude of Short-period Oscillations of Telluric Currents

curve within a parallelogram with sides parallel to AE and OF. The ratio R^E/R^N and the quantity A represent an angle of inclination and a vector modulus close to that of the vector AB.

In practice, a tellurogram with a dispersion of 90 mm/h had each hour divided into 18 intervals. (n.b. The closer Δt is to T_1, the more accurate are the values obtained for AB).

Tellurograms were obtained from five stations and the results presented graphically. Figures 2-4 illustrate the regular course of the diurnal variation of the preferred direction and average amplitudes for the stations : Lovozero ($67°58'$ N, $35°05'$ E), Alushta ($44°41'$ N, $34°25'$ E), Uzhgorod ($48°35'$ N, $22°22'$ E), for three months. Figure 5 shows the diurnal variations for the stations: Petropavlovsk-Kamchatskiy ($53°06'$ N, $158°38'$ E) and Alma-Ata ($43°16'$ N, $77°22'$ E). The abscissa represents Universal Time with a dotted line to indicate 9.00 local Time. The table on p 1043 gives the prefered direction (above) and average amplitude (below) for each station.

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SOV/49-58-8-13/17

variations in the Preferred Direction and Average Amplitude of
Snort-period Oscillations of Telluric Currents

It was established as a result of the above work that:
1) the variations in the preferred direction and average
amplitude of short-period oscillations have a distinctive
diurnal course at each station, regularly repeating itself
for at least three months; 2) the character of the
variations in preferred direction at different stations has
no noticeable similarity either in Universal or in Local
Time; 3) the observed dependence of variation in average
amplitude on Local Time requires more statistical
verification by a large number of stations. There are 5
figures. There are 1 French and 1 Soviet references.

ASSOCIATION: Akademiya nauk SSSR,Institut fiziki Zemli (Ac.Sc.USSR
               Institute of Terrestrial Physics)
SUBMITTED: January 23, 1958

Card 5/5   1. Terrestrial magnetism--Analysis

BARSUKOV, O.M.; TROITSKAYA, V.A.; PODOL'SKIY, A.D., red.; MARKOVICH,
        S.G., tekhn.red.

[Soviet stations for earth currents] Sovetskie stantsii
zemnykh tokov. Moskva, 1959. 21 p.   (MIRA 13:10)
     (Magnetism, Terrestrial--Observatories) (Earth currents)

AUTHOR: Barsukov, O.M

TITLE: Some Properties of a Telluric Current ... P...
           5 to 10 minutes

PERIODICAL: Izvestiya Akademii nauk SSSR, Se... of ...
           1,5?, Nr ?, pp ... (USSR)

ABSTRACT: The observations of ... ...
           ...tions listed in Tho 1 ... ... riod ... ...
           to February 1958. The oscillo...ram obtained ...
           by means of the transparen... paper in order to determine
           amplitude E. The formula (1) was employ.. for determination
           of the directional components E_N and ... ...
           of which was based on the formulae (2) to (5). Fig 1 ...
           strates the results obtained for ... ...ion ...
           Fig.. illustrates the resemblance of os..lle ..ms for a
           number of stations where the amplitude, indicated by the
           arrow, represents the magnitude of the component E_E. The
           relationship of amplitudes of every station E_{mn} to those
           of the station Ashkhabad E_{an}, according to the formula

Card 1/2 $K_{mn} = E_{mn}/E_{an}$, (n - oscillation nr, m - station index)
           was analysed. Also, the relationship

$$\delta\varphi_{mn} = \frac{E_{mnN}}{E_{mnE}}$$

SOV/49-59-9-14/15

Some Properties of a Telluric Current with Period of 5 to 20 minutes

was calculated in order to determine the value $t_g \varphi_{mn}$ characterising the direction of oscillation. The mean value of both $\overline{K}_m$ and $t_g\overline{\varphi}_m$ (foot of p 1399) were determined by the statistical methods (D_i (t) and formula at the top of p 1400). The results are illustrated in Fig 3 and tabulated in Tab 1. All the above calculations could be adjusted also to other periods than 5 to 20 mins. There are 3 figures, 2 tables and 2 Soviet references.

ASSOCIATION: Akademiya nauk SSSR. Institut fiziki Zemli
(AS USSR. Institute of Physics of the Earth)

SUBMITTED: July 11, 1958

Card 2/2

SOV/49-59-11-20/28

AUTHOR.   Barsukov, O. M.

TITLE   The Geomagnetic Effect of Chromospheric Flares According to the Data of 1957

PERIODICAL   Izvestiya Akademii nauk SSSR, Seriya geofizicheskaya 1959, Nr 11, pp 1690-1693 (USSR)

ABSTRACT   A short survey is given of the investigations described by many workers, (Refs 1 to 12) Based on those works, the author attempts to find the correlation between the chromospheric flares and the geomagnetic activity. The data of 233 flares of 1957 were analysed. Their number was counted for eight longitudinal zones of the sun (see Table on p 1691) and a mean K - index, as described by Sabben (Ref 6), was determined for each zone. The relationship between mean K - index and the time from flare occurrences for each zone was obtained, as illustrated in Fig 2. The analysis of the relationship between the latitude and the maximum of geomagnetic disturbance showed that it is not the flare which produces the disturbing corpuscles but the region ("region F") where it was observed. Fig 3 shows a relationship between the mean K - index and the time counted from

SOV/49-59-11-20/28

Geomagnetic Effect of Chromospheric Flares According to the
Data of the ...

the region F passing through the meridian (a) and from
the starting   time   of all 233 observed flares (b).
Thanks are conveyed to E. R. Mustel for his assistance.
There are 3 figures, 1 table and 12 references, 2 of
which are Soviet, 7 English, 1 Czech and 2 French.

ASSOCIATION: Akademiya nauk SSSR, Institut fiziki Zemli
(Academy of Sciences USSR, Institute of Physics of
Earth)

SUBMITTED: November, 10, 1958   ✓

BARSUKOV, C. M., Cand Phys-Math Sci -- (diss) "Some problems of the morphology of geo-electromagnetic activity." Moscow, 1960. 12 pp; (Leningrad Order of Lenin State University im Zhdanov, Academy of Sciences USSR, Inst of Earth Physics im G. Yu. Shmidt); price not given; list of author's works on pp 11-12 (14 entries); (KL, 52-60, 118)

4224/2
S/732/60-009/000/002/004

AUTHOR: Barsukov, O. M.

TITLE: Observations on the perturbations of the electric field of the earth.

SOURCE.   Sovetskaya antarkticheskaya ekspeditsiya, 1955-   . [Trudy] t. 9:
            Vtoraya kontinental'naya ekspeditsiya, 1956-1958gg.; nauchnyye
            rezul'taty. A. F. Treshnikov, ed. Leningrad, Izdatel'stvo "Morskoy
            transport." 1960, 25-30.

TEXT: This is a part of the first report on observational data on earth currents
in Antarctica obtained by the Second Soviet Continental Expedition, 1956-1958.
First tentative conclusions on the morphology of the geoelectromagnetic-field
perturbations are set forth. The data were obtained at Mirnyy and Oazis stations
from tellurograms recorded at 90 mm/hr tape-advance rate. Correlation with
northern mid-latitude (Ashkhabad, Borok) and Arctic high-latitude (Cape
Chelyuskin, Lovozero) recordings shows significant simultaneity of events and
similarity of amplitude and shape. The statistical analysis was based on the
total amplitude (square root of the sum of the squares of the north and east com-
ponents) divided by the amplitude observed at Ashkhabad ($37^\circ 57'$ N; $58^\circ 06'$ E) and
on the ratio of the north component divided by the east component at the Antarctic

Card 1/2

Observations on the perturbations of the electric field... S/732/60 009 000, 002 004

station. It was found that earth-current variations of planetary character, with 5-20-minute periods, have a stable, time-independent, direction. The relative amplitudes at the polar stations are at least one order of magnitude greater than those at mid-latitude stations and are also fairly stable with time. The prevailing directions vary sharply from station to station. The daily variation of the earth-current field at Mirnyy and Oazis has a sharp maximum at approximately 0700Z (Greenwich) time. The predominant direction at Mirnyy is $21°24'$, at Oazis $79°36'$. The author employs a normalized physical amplitude index to correlate the observations at the two Antarctic stations with the two northern mid-latitude stations and the two northern Arctic stations, and, more especially, to investigate the planetary character of the perturbations of the electromagnetic field of the earth. There are 2 figures, 1 table, 1 Soviet and no Western references.

ASSOCIATION: None given.

Card 2 2

3.9410

28841   S/169/61/000/004/026/026
A005/A130

AUTHOR: Barsukov, O.M.

TITLE: Introduction of E_i-indices of disturbance of the telluric field

PERIODICAL: Referativnyy zhurnal. Geofizika, no. 4, 1961, 51 - 52, abstract 4 G
373. [V sb.: Vozmushcheniya elektromagnitn. polya Zemli. Moscow,
AN SSSR, 1960, 63 - 69 (English summary)]

TEXT: The proposed E-indices of disturbance of the geoelectric field re-
present the mean daily maximum amplitude of telluric current fluctuations ex-
pressed in fractions of its mean annual value. For quiet days the indices are
less than unity. With increasing activity the index increases approximately
alike for all stations. This makes it possible to obtain the mean arithmetic
values (E_i) of the index from its values E' for each station. Comparison of the
E'-indices of various stations and comparison of the mean E_i-indices over all
stations with the magnetic indices C and K makes it possible to detect some in-
teresting regularities: 1) the values of the E' indices for arctic, antarctic and
midlatitude stations do not essentially differ from each other; 2) the planetary
K-indices of the magnetic field correlate well with the values of the E_i-indices;

Card 1/2

Introduction of E_1-indices of disturbances of....   28841   S/169/61/000/004/026/026
                                                                    ACO5/A130

3) the indices E display a high coefficient of correlation with the characteristics of C. A linear dependence of the E_1-indices on the degree of disturbance is observed which allows more perfect analysis of activity by E_1-indices than by C- and K-indices, which have limited values during great storms. The indicated properties of E-indices give reason to infer that they may serve for investigating the planetary character of disturbances of the geomagnetic field.

F. Zybin

[Abstracter's note: Complete translation.]

Card 2/2

3.9000

S/049/60/000/01/019/027
E201/E191
82249

AUTHORS: Mishin, V.M., and Barsukov, O.M.

TITLE: The Diurnal Variations of the Telluric Currents
              According to the Data of Soviet Stations during the
              I.G.Y.

PERIODICAL: Izvestiya Akademii nauk SSSR, Seriya geofizicheskaya,
              1960, No 1, pp 148-150

TEXT: The diurnal variations of the telluric currents were
analysed using the E-indices of activity defined as the hourly
values of the amplitudes R of tellurograms. The tellurograms
were obtained at a scanning rate of 90 mm/hour. These indices
were averaged out for three seasons (summer, winter and equinox)
using

$$E_i = 1/n \sum_{n=1}^{n} R_{i,n}$$

where n is the number of 24-hour periods employed in averaging,
and i is the number of a particular hour. The authors used the
data obtained at Soviet stations, both in the Antarctic

Card 1/3

S/049/60/000/01/019/0?
E201/E191 0224?

The Diurnal Variations of the Telluric Currents According to the
Data of Soviet Stations during the I.G.Y.

("Oazis", "Mirnyy") and in the USSR, as well as data of non Sov?t
stations (Table 1) The analysis of these results (Figs 1 and 2
Table 2) showed that the mean component of the diurnal variation
of telluric currents is a wave with a period of 24 hours This
wave consists of two parts with maxima occurring close to noon and
close to midnight, and with amplitudes which depend on latitude.
The first of these parts is due to a dynamo effect in the
ionosphere, and the second is due to screening by the ionosphere
in middle latitudes and a night maximum of conductivity (due to
corpuscular streams) in high latitudes Similar behaviour was
earlier reported in the diurnal variations of the telluric magnetic
fields, with periods from several seconds to a minute
(V A Troitskaya, at the May 1959 seminar of the Laboratory for
Magnetometry, Institute of Physics of the Earth, Acad Sci USSR
There are 2 figures, 2 tables and 1 Soviet reference

Card 2/3   √

S/049/60/000/01/019/0.7
E201/E191   82249

The Diurnal Variations of the Telluric Currents According to the
Data of Soviet Stations during the I G Y

ASSOCIATION: Akademiya nauk SSSR, Institut fiziki zemli
(Institute of Physics of the Earth, Academy of
Sciences, USSR)

SUBMITTED: June 29, 1959

Card 3/3

3.9000

S/049/60/000/01/021/027
E201/E191

AUTHOR: Barsukov, O.M.   82251

TITLE: The Problem of Three "Velocities" of Corpuscular Streams

PERIODICAL: Izvestiya Akademii nauk SSSR, Seriya geofizicheskaya,
           1960, No 1, pp 155-157

TEXT: Comparison of the effects of chromospheric flares with
geomagnetic activity indicated the existence of three disturbance
maxima. They are illustrated in Fig 1 by means of E-indices for
the epoch 1957-1958. The E-indices are 24-hour averages of the
hourly amplitudes R in mV/km in records of telluric currents
scanned at the rate of 90 mm/hour. The results in Fig 1 were
obtained by the method of epoch superposition. The present paper
gives a different, independent confirmation of the existence of
three sequences of maxima, and discusses the probability of the
observed sequences of geomagnetic disturbances. The analysis
(Tables 1 and 2) of 1625 sequences of 24-hour averages of K_p-indices
for 13 years (1946-1958) led to the following conclusions.
In sequences with high intensities of disturbance 8 days before
(or after) a zero day, there were maxima 11 days after (or
respectively before) the zero day. In sequences with high

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S/049/60/000/01/021/027
E201/E191   82251

The Problem of Three "Velocities" of Corpuscular Streams

intensities of disturbance 11 days before (or after) the zero day,
maxima occurred 8 days after (or respectively before) and minima
11 days after (or respectively before) the zero day. The
probability of these sequences was considerably higher than that
due to random processes. The above conclusions confirm once again
the assumption of three "velocities" of corpuscular streams, and
these conclusions are valid for any year in the 1946-58 period.
There are 1 figure and 2 tables.

ASSOCIATION: Akademiya nauk SSSR, Institut fiziki zemli
             (Institute of Physics of the Earth, Academy of
             Sciences USSR)

SUBMITTED: May 26, 1959

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3.1800 (1041, 1062, 1168)

83856

S/049/60/000/007/001/003
E032/E514

AUTHOR: Barsukov, O.M.

TITLE: On the Relation Between Chromospheric Flares and Geomagnetic Activity (Based on Observations During 1957-1959)

PERIODICAL: Izvestiya Akademii nauk SSSR, Seriya geofizicheskaya, 1960, No.7, pp.977-978

TEXT: In an earlier paper (Ref.1) the author reported the existence of three maxima in the geomagnetic activity following the passage of an active region on the Sun through the central meridian.   The present paper reports further results based on more complete data.   137 cases of strong flares (strength 3 and 3+) were employed and Fig.1 shows the corresponding plot of the K_p indices (lower curve).   The other curves in Fig.1 refer to flares observed separately in the hemispheres indicated in the figure.   They comprise 68 and 69 cases, respectively and together make the total number of 137 cases plotted in the lower curve.   Fig.2 shows a further sub-division of the 137 cases mentioned above.   The particular regions on the Sun are shown by the shaded areas on all these

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S/049/60/000/007/001/003
E032/E514

On the Relation Between Chromospheric Flares and Geomagnetic
Activity (Based on Observations During 1957-1959)

graphs. The following conclusions can be drawn from a
consideration of Figs. 1 and 2:
a) After an F-region passes through the central meridian, one
observes enhanced geomagnetic activity after 2 to 3, 11 to 12
and 22 to 23 days, respectively.
b) These three maxima occur both for the northern and for the
southern hemispheres of the Sun. ,
c) A 27 day periodicity of each of these three maxima is
noticeable.
d) The maxima were not present for 14 days. Fig. 4 shows curves
obtained by the "superimposed epoch method" for June, 1957 -
May, 1958 and separately for June, 1958 - May, 1959.
The maxima are well defined during the period of high solar
activity and less so otherwise. The statistical results
reported in this paper do not, however, indicate the reason
for the appearance of these three discrete maxima. There
are 4 figures and 3 references: 2 Soviet and 1 English.

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S/049/60/000/007/001/003
E032/E514

On the Relation Between Chromospheric Flares and Geomagnetic
Activity (Based on Observations During 1957-1959)

ASSOCIATION: Akademiya nauk SSSR Institut fiziki Zemli
(Academy of Sciences USSR, Institute of Physics
of the Earth)

SUBMITTED: November 17, 1959

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29866
S/169/61/000/009/047/056
D228/D304

3.9110 (1121, 1482)

AUTHORS: Barsukov, O. M., and Zybin, K. Yu.

TITLE: The non-perpendicularity of the variation vectors for
                    E and H of the earth's geomagnetic field

PERIODICAL: Referativnyy zhurnal, Geofizika, no. 9, 1961, 26,
                    abstract 9G210 (Korotkoperiod. kolebaniya elektro-
                    magnitn. polya Zemli, no. 3 M., AN SSSR, 1961, 83-88)

TEXT: It is shown theoretically that for an anisotropic medium the
principle of the mutual perpendicularity of vectors of electric and mag-
netic alternating fields is violated in horizontal directions. Recordings
of short-period variations at the Lovozero and Borok stations were pro-
cessed for experimental verification. The principal directions of vectors
E and H, and their diurnal variation were determined for Lovozero; the
perpendicularity deviation is ~ 9° ± 1°. Electromagnetic measurements
of the impedance for different directions disclosed the anisotropy of the
crust in the Lovozero area which, according to the calculations, should

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29886
S/169/61/000/009/047/056
D228/D304

The non-perpendicularity

create a perpendicularity deviation of $6 - 12^0$. For Borok, the diurnal variation of the directions of E and H was determined from the maximum amplitudes of the short-period fluctuations for an hourly interval. The diurnal variation of the directions of H was, moreover, determined from the orientation of the polarization ellipse of certain characteristic fluctuations. The perpendicularity deviation of E and H amounts to

$2 3' - 2'$ for Borok. In addition to this the data of electrical prospecting confirm the absence of anisotropy. _ Abstracter's note: Complete translation .

Card 2/2

S/169/62/000/011/061/077
D228/D307

AUTHOR: Barsukov, O.M.

TITLE: Conference on short-period oscillations and earth
               currents

PERIODICAL: Referativnyy zhurnal, Geofizika, no. 11, 1962, 1,
               abstract 11G5 (Geofiz. byul., Mezhduved. geofiz.
               kom-t pri Prezidiume AN SSSR, no. 11, 1962, 62-64)

TEXT: The conference was organized by the Sektsiya geomag-
netizma i zemnykh tokov MGK (Geomagnetism and Earth Current Section,
MGK). It was devoted to a discussion of the state of research at
Soviet earth-current stations, the exchange of data in the IGY-IGC,
and the observational programs in 1961-1965. A series of scientific
papers was heard.
/ Abstracter's note: Complete translation_/

Card 1/1

BARSUKOV, O.M., kand. fiziko-matem. nauk

Experiment in magnetically connected points. Zem. i vsel.
1 no.4:74-78 Jl-Ag '65.   (MIRA 18:12)

BARSUKOV, O.M.

Geometry of short-period variations (pulsation) of the earth's electromagnetic field. Geomag. i aer. 5 no.3:487-493 My-Je '65.
(MIRA 18:3)

1. Institut fiziki Zemli imeni Shmidta AN SSSR.

BARSUKOV, O.M.; RIVIN, Yu.R.

Calibration of apparatus for recording short-period variations of
earth currents. Izv. AN SSSR. Fiz. zem. no.1:131-134 '65.
(MIRA 18:5)

1. Institut fiziki Zemli AN SSSR.

L 52189-65   EWT(1)/FCC/EEC(t)   Po-4/P1-4   GW

ACCESSION NR: AP5014108

UR/0203/65/005/003/0487/0493

550.385.37

AUTHOR: Barsukov, O. M.

TITLE: Geometry problems of short-period variation in terrestrial electromagnetic field (wobbling)

SOURCE: Geomagnetizm i aeronomiya, v. 5, no. 3, 1965, 487-493

TOPIC TAGS: electromagnetic field, geomagnetic field, correlation technique, harmonic oscillation, OMS 2 photooscillogram

ABSTRACT: A correlation analysis was made to determine the polarization character-istics of electromagnetic field short-period variations (wobbling). An idealized situation is considered where two harmonic oscillations of different frequencies are linearly polarized in the XY plane and are expressed by

$$X = a_x \sin(\omega t + a_x) + b_x \sin(\omega_1 t + \beta_x),$$
$$Y = a_y \sin(\omega t + a_y) + b_y \sin(\omega_1 t + \beta_y).$$

It is assumed that along each component a wobbling motion exists with envelope period $T = 2\pi/(\omega - \omega_1)$. The corresponding correlation coefficient then becomes

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L 52189-65
ACCESSION NR: AP5014108

$$r = \frac{1 + \dfrac{b_x}{a_x}\dfrac{b_y}{a_y}}{[(1 + b_x^2/a_x^2)(1 + b_y^2/a_y^2)]^{1/2}}.$$

A more complicated case is considered with the addition of an elliptic polarized oscillation, and the following set of conclusions is drawn. The correlation coefficient of the two functions X and Y depends on the amplitude ratio b_x/a_x and b_y/a_y; the correlation function at $\Delta t = 0$ has a maximum for a linearly polarized harmonic; the maximum occurs only at $\Delta\alpha = 2\pi k$ and simultaneously at $\Delta\beta = 2\pi h$ h,k = 0,1, 2,....   For the correlation analysis the magnetogram ordinates were used where $r = r(\Delta t)$ curves could only be constructed approximately using a mean square fit. The synchronous observation of the geomagnetic field variation of the "pearl" type was conducted at an altitude of 1100 km at Lovozero and Borok by means of induction coils with magnetic cores, amplifiers, and photo-oscillograms. The resulting correlation graphs show that the harmonics at Lovozero are elliptically polarized, with no maximum at $\Delta t = 0$, and there is no phase lag at the 1100-km altitude. Orig. art. has: 13 equations and 4 figures.

ASSOCIATION: Institut fiziki Zemli im. O. Yu. Shmidta, AN SSSR (Institute of Terrestrial Physics, AN SSSR)

Card 2/3

L 52189-65
ACCESSION NR: AP5014108

SUBMITTED: 05Jun64   ENCL: 00   SUB CODE: ES, MA

NO REF SOV: 001   OTHER: 001

Card 3/3

L 13321-66   EWT(1)   GW

ACC NR: AP6003339   SOURCE CODE: UR/0387/66/000/001/0080/0084

AUTHOR: Barsukov, O. M.

75

ORG: Institute of Physics of the Earth, AN SSSR (Institut fiziki Zemli AN SSSR)

TITLE: Characteristic periods of pearl-shaped variations

SOURCE: AN SSSR. Izvestiya. Fizika Zemli, no. 1, 1966, 80-84

TOPIC TAGS: magnetic storm, proton, solar cycle, electromagnetic field, magnetohydrodynamics, geomagnetic field, aurora, charged particle, magnetic field, astrophysics

ABSTRACT: During the IGY short-period variation measurements of the electromagnetic field in the polar regions of the Soviet Union were carried out at five Arctic stations (Kheys Island, Barentsburg, Cape Chelyuskin, Tiksi Bay, and Lovozero) and in Antarctica (Mirnyy and Oazis). Analysis of data obtained showed that the properties of the polar regions are associated with the cycle of solar activity. Especially rapid irregular variations of type Pil and the frequency of excitation of pearl-shaped variations Pcl depend upon the solar cycle. The daily rate of these variations differs from those at middle latitudes. Soviet observatories noted giant pulsations of types Pg and Lpc in the polar regions. Simultaneous excitations of stable

Card 1/4   UDC: 550.385.37

L 13321-66

ACC NR: AP6003339

O

variations occur in the polar regions during equinoxes and very seldom during solstices. Regular stable variations are typical of polar and other latitudes. Stable variations of type Lpc occur mostly in the polar regions. Their vibrations last 3—7 min. This type of variation takes place in middle latitudes only in magnetic storms, appearing mostly at noon. Rapid irregular variations of type Pil occur with high intensity in the auroral zone where their amplitude reaches hundreds of mv/km. The amplitude of Pil variations diminishes rapidly to the north and south of the auroral zone. This type of variation occurs before midnight and in the morning hours. The Pil-type variations are very much associated with auroras. The appearance of these variations testifies to the development of auroral processes in the upper atmosphere. Special interest was aroused by the pearl-shaped variations. Figure 1 shows this type of variation which was obtained on 6 August 1964 at Tiksi Station. Long-term records at USSR observatories made it possible
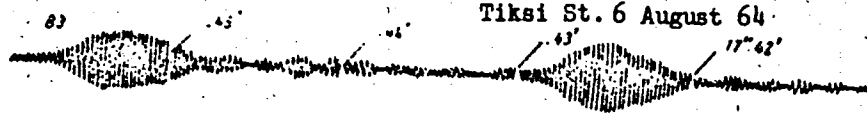
Tiksi St. 6 August 64

Fig. 1. Pearl-shaped magnetic vibrations

to conclude that the frequency of appearance of these variations increases

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L 13321-66

ACC NR: AP6003339

with the decrease of the latitude of the observation point. This kind of
variation occurs in magnetically coupled regions. The formation of pearl-
shaped variations is hypothesized to be a movement of accumulated par-
ticles around a magnetic force line. Traveling from one hemisphere to
the other along the force line between magnetically coupled points, the
particle cluster increases the intensity of the magnetic field in the di-
rection towards which the cluster moves while decreasing the magnetic
field intensity behind it. The increased field causes intense vibrations
which form the pearl. Another hypothesis explains this formation by
magnetohydrodynamic waves which propagate from one hemisphere to
the other. Experimental simultaneous observations were carried out in two
magnetically coupled points, Sogra in the USSR and on the French is-
land of Kergelen in the Indian Ocean. Processing of recorded data led
to the following conclusions: 1) Maxima of individual pearls in opposite
hemispheres are shifted by a half-period. Periods of envelopes over the
pearls are preserved in both hemispheres. 2) No delay in phases was
observed when the movement was from east to west. 3) Periods of pearl
formation in coupled regions are equal. These data cannot be considered
as a support of either the first or the second hypothesis. O. M. Barsukov
analyzed theoretically the movement of charged particles in a magnetic field.

Card 3/4

L 13321-66

ACC NR: AP6003339   O

He applied his theory to protons because electrons of ordinary energies did
not satisfy theoretical requirements. However, Barsukov's theory is not be considered
as a complete explanation of the pearl-shaped form of microvariations of the
geomagnetic field. Orig. art. has: 5 figures, 7 formulas, and 1 table.
/ATD PRESS: 4172-F/

SUB CODE: 08, 03 / SUBM DATE: 29Jan65 / OTH REF: 009

Card 4/4 Fw)

L 28961-66   EWT(1)/FCC   GW

ACC NR: AP6019109   SOURCE CODE: UR/0384/65/000/004/0074/0078

AUTHOR: Barsukov, O. M. (Candidate of physicomathematical sciences)

ORG: none

TITLE: Experiment at magnetically conjugate points

SOURCE: Zemlya i vselennaya, no. 4, 1965, 74-78

TOPIC TAGS: geomagnetic field, geophysics

ABSTRACT: A particular type of pulsations of the geomagnetic field dis-
covered during the IGY is "pearls," in the international classification
denoted Pc-1. It is of great interest to study the appearance of "pearls"
at two conjugate points; there were many indications that "pearls" either
are propagated along a magnetic line of force or are generated on a line
of force common for any pair of conjugate points. At the beginning of
the IQSY the Institute of Physics of the Earth of the Academy of Sci-
ences and the Ionospheric Research and Telecommunications Group in
France undertook an attempt to make detailed investigations at conjugate
points in the northern and southern hemispheres with identical apparatus
(at Sogra village in Arkhangel'skaya Oblast and on Kerguelen Island in
the Indian Ocean). Records are synchronized to an accuracy of 0.01
second by quartz clocks. It has been found that the periods of the en-
velopes at the conjugate points are identical but there is a phase shift

Card 1/2

L 28961-66

ACC NR: ·AP6019109

0

:of about 180°. This means that when beats are observed in one hemisphere
they are absent in the other. "Pearls" recorded simultaneously at lati-
;tudinally spaced stations were cophased to a high degree of accuracy.
It is postulated that protons, moving between mirror points, are re-
sponsible for the periods of the envelopes with a phase shift of 180°
at conjugate points. The beats themselves are generated by processes
with frequencies close to a cyclotron frequency. The experiments at
the conjugate stations are continuing. Orig. art. has: 6 figures. [JPRS]

SUB CODE: 08 / SUBM DATE: none

Card 2/2   BLG

BARSUKOV, P. A. (Associate Professor, Yakutsk State University)

"In addition to the question of electrophoresis of penicillin".

Veterinariya, Vol. 38, No. 2, 1961, p. 63.

BARUKOV, P.A., docent

Problem of the electrophoresis of penicillin. Veterinariia 38 no.2:
63-65 F '61. (MIRA 14:1)

1. Yakutskiy gosudarstvennyy universitet.

BARSUKOV, P.M.,inzh. po defektoskopii (Chelyabinsk)

Laboratory car used for rail defectoscopy. Put' i put. khoz. no.4:22-23
Ap '58. (MIRA 11:4)
(Railroads--Rails--Testing) (Railroads--Electronic equipment)

KALANDADZE, Georgiy Viktorovich. Prinimali uchastiye: SMIRNOV, A.S.;
BARSUKOV, P.V.; SMIRNOV, A.V., nauchnyy red.; BARSUKOV, P.V.,
nauchnyy red.; SOKOLOVA, M.A., red.; PERSON, M.N., tekhn.red.

[Course in mechanical drawing] Kurs chercheniia. Moskva,
Vses.uchebno-pedagog.izd-vo Proftekhizdat, 1960. 410 p.
(MIRA 13:5)

(Mechanical drawing)

BARSUKOV, P.Ya.

Neuroregulation of function of the female genitalia. Fel'dsher & akush.
no.5:18-22 May 1953.   (CLML 25:1)

1. Fifth course student.   2. First Moscow Order of Lenin Medical Insti-
tute.

BARSUKOV S.

USSR/ Miscellaneous - Conferences

Card 1/1   Pub. 89 - 5/33

Authors   : Barsukov, S.; Yemshakov, N.; and Demin, G.

Title   : Amateur radio operators honor the 20th Convention of the Communist Party
               of the Soviet Union

Periodical   : Radio 2, 8-9, Feb 56

Abstract   : Various amateur radio organizations promote contests in honor of the 20th
               Convention of the Communist Party of the Soviet Union. Illustration.

Institution :   .....

Submitted   :   .....

LARIONOV, A.N.; KARATYGIN, A.M.; PETROV, I.I.; MOROZOV, D.P.; BARSUKOV, S.G.;
RASKIN, Ye.A.; KHALIZEV, G.I.; MASLENNIKOV, L.V.

Candidate of engineering, Docent K.V. Urnov. Elektrichestvo no.2:
95 F '58.   (MIRA 11:2)
            (Urnov, Konstantin Vasil'evich, 1907-)

1. BARSUKOV, S.S.,

2. USSR (600)

4. Hydraulic Machinery

7. Standardization of hydraulic machinery. Stan.i instr. No. 1 1953.

9. Monthly List of Russian Accessions, Library of Congress, ___April___ 1953. Uncl.

BARSUK__ __, __. __.

Barsukov, __. __. - "The effect of polarization of __ energy __ __ t re a__ pro__ __ __ of minerals," in the sym__osi__: Nauch. rabaty studentov __orn__-metallurg. in-tov __shy. __o__ow, 19__, __. __-__, - Biblio__: 10 item__

__: __-__. __., __: __ct __, (__tepis '2__rn__ __ __ __ __, __. __, 19__.

BARSUKOV, V.L.

62

/ The mode of the transportation of tin in hydrothermal solutions. V. Barsukov, Doklady Akad. Nauk S.S.S.R. 93, 1065-8(1953).—The classic synthesis of cassiterite from SnF₄ vapors (A. Daubrée, Compt. rend. 29, 227(1849)) illustrates only the formation of this mineral in the greiseu paragenesis which is characterized as a highly acidic complex. Quartz, F-contg. muscovite, and fluorite, however, are formed together in alk. solns. (cf. Noll, et al., Voprosy Fiz.-Khim. v Mineral. i Petrog., Sbornik Peretod Statei (1950)) in which SnF₄ is not stable. Daubrée's hypothesis is therefore not valid for those SnO₂ deposits in which quartz appears with albite (which replaced K feldspar and plagioclase) and muscovite (replacing biotite), or for SnO₂ in paragenesis with sulfide ores which are evidently formed from alk. solns. For the cassiterite ores of the Turkestan Range the formation of SnO₂ by the hydrolysis of Na₂SnO₃ solns. is typical (Strelkin, C.A. 34, 5671), or better than that of the Na₄[Sn(OH)₆] complex. For the explanation of the assocn. of cassiterite with fluorite the assumption of the analogous hydrolytic reaction of Na₂[SnF₆] is important (Fersman, Izbrannye Trudy, Izdatel. Akad. Nauk S.S.S.R. 1 (1952) and Geokhimiya 3, (1937)); in this complex compd. Sn⁴⁺ exerts a strong polarizing effect, Na⁺ also has a polarizing effect but F⁻ is the least polarizable anion, while OH⁻ is much better polarized by the cations mentioned. Na₂[SnF₆] is therefore much less sol. than Na₂[Sn(OH)₆]. Intermediate complexes of the type Na₂[Sn(F, OH)₆] probably occur in nature, not the end members of the series. They are easily hydrolyzed at pH 7.0 to 7.5 which is normal for hydrothermal solns. The temporary formation of HF also explains the simultaneous decompn. of the feldspars to topaz, muscovite, quartz, and fluorite, be-

Inst. Geochem. + Analytical Chem. im. V.I. Vernadskiy, AS USSR

sides the crystn. of cassiterite. For this hypothesis the fact is important that the lower limit horizon of the occurrence of muscovite-quartz-cassiterite deposits coincides with the upper-limit level of the albitization, and of the muscovitization of biotite which is observed in the Kalbin Range. Tourmaline and arsenopyrite are typical for a transition zone (observed in particular beauty in Cornwall); a vertical-upward gradient in the concn. of Na^+ of the hydrothermal solns. is characteristic for the zonality of the deposits. Al^{3+} is mobilized by the albitization of the plagioclases, and migrates upward into the muscovite zone, and the same is the case for Mg^{2+} and Fe^{3+} which are pptd. in the transiton zone of neutrality or low alkalinity as tourmaline (cf. F. G. Smith, *Econ. Geol.* 44, 624(1949)).   W. Eitel

Inst. Geochem. & Analyt. Chem. im. V.I. Vernadskiy Acad. Sci USSR

BARSUKOV, V. BL.

BARSUKOV, V.L.; KURIL'CHIKOVA, G.Ye.

Conditions of the formation of endogenetic ascharite. Geokhimiia no.4:
312-319 '57.   (MIRA 12:3)

1. V.I. Vernadskiy Institute of Geochemistry and Analytical Chemistry,
Academy of Sciences, U.S.S.R., Moscow.
                    (Szaibelyte)

BARSUKOV, V.L. KURIL'CHIKOVA, G.Ye.

Boron content of serpentinites. Geokhimiia no.5:389-391 ' 57.

(MIRA 12:3)

1. V.I. Vernadsky Institute of Geochemistry and Analytical Chemistry,
Academy of Sciences, USSR, Moscow.

(Tayezhnyy--Serpentinite) (Boron)

BARSUKOV, V.L.; YEGOROV, A.P.

Some geochemical peculiarities in the formation conditions of
hypogenic borate deposits [with summary in English]. Geokhimiia
no.8:673-683 '57.
(MIRA 11:2)

1.Institut geokhimii i analiticheskoy khimii im. V.I. Vernadskogo
AN SSSR, Moskva.
(Borates)

F(8) 24(2)

AUTHOR: Barsukov, V.L.

TITLE: Some Peculiarities of the Boron Isomorphism in Silicates
              (Ob izomorfizme bora v silikatakh)

PERIODICAL: Geokhimiya, 1959, Nr 7, pp 640 - 666 (USSR)

ABSTRACT: There is a certain reciprocity effect between the boron and the
              aluminium isomorphism with silicium depending on the structural
              type of the silicate. The SiO_4 tetrahedron will most probably
              be substituted by $BO_3(OH)^{4-}$ in orthosilicates; probably also B^{3+}
              is directly replaced by Si^{4+}. By additional ions with the coordi-
              nation number 6 the charge is balanced again. In metasilicates
              with chain radicals two silicium-oxygen tetrahedrons can be re-
              placed by a boron and an aluminium tetrahedron each. In frame
              silicates with changing Si/Al ratio, boron can enter isomorphical-
              ly. On the other hand the probability for entering in the remain-
              ing frame silicates, in banded and schistous silicates is low. It
              can consequently be concluded that plagioclase in intrusive igneous rocks
Card 1/2   has probably a higher boron content.

Some Peculiarities of the Boron Distribution in Ultrabasic   SOV/7-59-3-6/7

The author publishes some analyses in samples of ultrabasite given to him by B.I. Betling and were analyzed by N.N. Argunova (Table 1). Samples of hornblende, phlogopite and biotite were examined for their boron content by N.V. Savihova at the Sektorial nays Laboratoriya Instituta geokhimii i analiticheskoy khimii (Sectoral Laboratory of the Institute for Geochemistry and Analytical Chemistry (Table 2). Data are given in 2 tables and 13 references, of which are Soviet.

ASSOCIATION: Institut geokhimii i analiticheskoy khimii im. V.I. Vernadskogo AN SSSR im. V.I. Vernadskogo AN SSSR (Institute of Geochemistry and Analytical Chemistry, AN SSSR, Moscow

SUBMITTED: April 21, 1959

Card 2/2

BARANOV, V.I.; BARSUKOV, V.L.

Use of geochemical and geophysical methods in prospecting for boron. Zakonom. razm. polezn. iskop. 2:495-502 '59. (MIRA 13:4)

1. Institut geokhimii i analiticheskoy khimii imeni Vernadskogo AN SSSR.
   (Boron) (Geochemical prospecting) (Radioactive prospecting)

BARSUKOV, V.L.; NAUMOV, G.B.

Some remarks on A.G.Betekhtin's article "Behavior of
radioactive elements in the formation of endogenous de-
posits." Geol.rud.mestorozh. no.6:121-124 N-D '59.
(MIRA 13:7)

(Uranium)

BARSUKOV, V.L.; DERYUGINA, N.N.

Experimental investigation of the conditions of formation of kotoite-ascharite ores. Geokhimiia no.1:55-59 '60.
(MIRA 13:6)

1. V.I.Vernadskiy Institute of Geochemistry and Analytical Chemistry, Academy of Sciences, U.S.S.R., Moscow.
(Szaibelyite) (Kotoite)

S/007/60/000/005/001/002
B002/B060

AUTHOR: Barsukov, V. L.

TITLE: Mineral Indicators of Boron Content in Skarns

PERIODICAL: Geokhimiya, 1960, No. 5, pp. 399 - 404

TEXT: The author examined typical skarn minerals in order to find such
among them as enrich boron and thus serve as indicators of the boron
contents of ore-forming solutions. The isomorphism of boron is first in-
vestigated for this purpose, and the binding character of the elements
is taken into account in accordance with V. I. Lebedev's ideas (Ref. 7).
It can be thus deduced that forsterite takes up no boron; nor any garnet
in high-temperature skarns, as has been shown by R. V. Getling and
Ye. N. Savinova. In contrast therewith, garnets from garnet-wollastonite
skarns have 0.04% of B_2O_3. Here, boron is present as a tetrahedron
$\left[BO_3OH\right]^{4-}$. In chain silicates, aluminum and boron have the same valency,
hence, the occurrence of boron corresponds to its isomorphism with
aluminum. This has been experimentally investigated by A. I. Tsvetkov.

Card 1/2

Mineral Indicators of Boron Content in   S/007/60/000/005/001/002
Skarns   B002/B060

In V. A. Zharikov's opinion, the highest boron contents may be expected
to occur in diopsides of skarn-surrounding rocks, and to a lesser extent,
in "exoskarn" zones. This is also shown by the seven analyses made by
the author (Table 2). The same rule holds for hypersthene (3 analyses).
In amphiboles, boron cannot occur instead of aluminum, unless they con-
tain larger amounts of sodium; this is also shown by the six hornblende
analyses made by the author (Table 3). In the same way, it is deduced
for skeleton silicates that the boron content is dependent on the con-
tent of easily ionizable cations. In stratified silicates an isomorphism
between aluminum and boron is not possible. The following boron contents
in minerals are specified as being indicative of the boron content of
skarns: diopside 0.027%, hypersthene 0.015%, hornblende 0.020%, garnet
0.040% of B_2O_3. There are 3 tables and 15 references: 11 Soviet and 4 US.

ASSOCIATION: Institut geokhimii i analiticheskoy khimii, im. V. I.
              Vernadskogo AN SSSR, Moskva (Institute of Geochemistry and
              Analytical Chemistry imeni V. I. Vernadskiy of the Academy
              of Sciences USSR, Moscow)

SUBMITTED: October 25, 1959

Card 2/2

S/007/61/000/003/003/004
B107/B206

AUTHORS: Barsukov, V. L., Deryugina, N. N.

TITLE: Some experimental data on the formation conditions of
                danburite and datolite

PERIODICAL: Geokhimiya, no. 3, 1961, 252-257

TEXT: This article gives the results of 10 syntheses of danburite and
datolite, at 400°C and 350 kg/cm^2. The apparatus used for the synthesis has
been described in a previous article (Ref. 1: V. L. Barsukov, N. N.
Deryugina. Geokhimiya, no. 1, 1960). The initial solution consisted of
water, borax, calcium chloride, and the corresponding amount of hydrochloric
acid for adjusting the pH. A possible calcium-hydroxide precipitate was
filtered off. In two experiments, sodium meta-silicate was added. Into this
solution a basket was hung with a mixture of calcite:quartz = 3:1 (experi-
ments 1-7, 10) or with pure calcite. Detailed data are contained in Table 1.

Card 1/6

Some experimental ...   S/007/61/000/003/003/004
                                         B107/B206

No.	t in ^{o}C		duration of experiment	composition of the liquid phase	pH in.	pH after	result
1.	400	350	24 hr	250ml H_2O+8g borax + HCl	6.35	6.31	little danburite, single datolite granules
2.	390	320	10 hr	250ml H_2O+10g borax + HCl	7.58	7.28	danburite
3.	360	180	10 hr	275ml H_2O+10g borax + 2g $CaCl_2$+HCl, $Ca(OH)_2$ filtered off	8.50	7.50	danburite
4.	400	350	24 hr	250ml H_2O+10g borax + 2g $CaCl_2$+HCl, $Ca(OH)_2$ filtered off	8.35	7.90	danburite, datolite
5.	400	350	22 hr	275ml H_2O+10g borax + 1g $CaCl_2$, $Ca(OH)_2$ not filtered off CO_2 athmosphere	9.03	8.20	calcite on danburite, danburite on datolite

Card 2/6

Some experimental ...

S/007/61/000/003/003/004
B107/B206

No.	t in °C		duration of experiment	composition of the liquid phase	pH in.	pH after	result
6.	400	350	8 hr	250ml H_2O+5g borax + 1g $CaCl_2$+HCl, $Ca(OH)_2$ filtered off	8.60	8.00	calcite on danburite, in between datolite
7.	400	350	24 hr	250ml H_2O+10g borax + HCl	8.45	8.35	datolite, danburite
8.	400	350	13.5 hr	250ml H_2O+10g borax + 1g $CaCl_2$+HCl+0.5g Na_2SiO_3 $Ca(OH)_2$ filtered off	8.50	-	calcite on danburite, quartz + datolite
9.	400	350	15 hr	250ml H_2O+10g borax + 2g Na_2SiO_3+HCl up to pH 8.7 + 2g $CaCl_2$, $Ca(OH)_2$ filtered off	8.32	8.27	calcite on datolite, danburite, quartz
10.	400	350	23 hr	250ml filtrate of a lime suspension + 5g borax + HCl	9.10	8.80	lime remains unchanged

Card 3/6

Some experimental ...

S/007/61/000/003/003/004
B107/B206

The synthesis products were microscopically investigated in the transparent cut; X-ray pictures (Tables 2 and 3) of 2 specimens (nos. 2 and 7) were taken. It was thus shown experimentally that danburite forms predominantly at 360-400°C and 350 kg/cm^2 if the initial solution has a pH of from 6.3 to 8.0, and datolite predominantly at a pH of from 8.0 to 8.5. Further investigations concerning the dependence of pressure, temperature, pH and concentration of the initial solution are planned. There are 3 figures, 3 tables and 1 Soviet-bloc reference.

ASSOCIATION: Institut geokhimii i analiticheskoy khimii im V. I. Vernadskogo AN SSSR. Moskva (Institute of Geochemistry and Analytical Chemistry imeni V. I. Vernadskiy, AS USSR Moscow)

SUBMITTED: October 19, 1960

Legend to the Tables: Table 1: X-ray diagram of danburite, chromium radiation, vanadium filter, diameter of the preparation 0.5 mm. The diagrams were recorded by K. I. Tobelko and A. I. Volkova, GYeOKhI AN SSSR (see Association); Table 3: X-ray diagram of datolite from experiment No. 7.

Card 4/6

Some experimental ...

S/007/61/000/003/...
5107/B206

Conditions as above, (1) danburite from experiment No. 2, (2) danburite according to the manual by Mikheyev, (3) datolite according to the manual by Mikheyev, (4) calcite according to the manual by Mikheyev, (5) datolite from experiment No. 7.

Table 2

Данбурит из опыта № 2		Данбурит по справочнику Михеева		Датолит по справочнику Михеева		Кальцит по справочнику Михеева	
I	d	I	d	I	d	I	d
2	3,86	6	3,96			7	3,49
2	3,41	6	3,41			5	3,24
2	3,26	6	3,24				
10	3,02	9	2,99				
4	2,91	9	2,73				
3	2,49			5	2,49	10	2,81
7	2,28			6	2,277	10	2,49
1	2,22						
2	2,16					9	2,23
6	2,09	7	2,14			9	2,16
1	1,963	5	2,02	7	2,088	5	2,06
8	1,907					6	1,97
7	1,868	2	1,97				
2	1,781	2	1,76				
2	1,711	7	1,72			5	1,76
6	1,599					6	1,72

2	1,539		
4	1,521	2	1,524
2	1,483	5	1,498
2	1,458		
3	1,436		
3	1,419		
1	1,333	2	1,330
3	1,294		
1	1,281	2	1,285

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Some experimental ...

Table 3

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Датолит из опыта № 7		Датолит по справочнику Михеева		ПсевдоДатолит по справочнику Михеева		Кальцит по справочнику Михеева	
I	d	I	d	I	d	I	d
6	3,90	7	3,40	6	3,93		
3	3,42			6	3,41	4	3,339
3	3,34						
1	3,25	5	3,24	6	3,24		
10	2,98			9	2,99		
4	2,89	10	2,81				
8	2,78	2	2,61	9	2,73		
9	2,68	10	2,49			5	2,49
4	2,51	2	2,28			6	2,277
2	2,20	9	2,23				
8	2,22	5	2,16	7	2,14	7	2,088
2	2,14	6	2,06	5	2,02		
5	2,04		1,97	2	1,91		
2	1,975			2	1,76		
2	1,897			7	1,72		
4	1,812	5	1,76			1	1,671
5	1,754	6	1,72				
2	1,699			2	1,522		
7	1,676			5	1,498		
3	1,621						
4	1,556						
4	1,528						
5	1,501						
3	1,488						
3	1,453						
3	1,431						
2	1,407			2	1,330		
2	1,389			2	1,285		
3	1,367						
5	1,333						
5	1,283						
	2,257						

BARSUKOV, V.L.; DERYUGINA, N.N.

Some experimental data on conditions leading to the formation of
danburite and datolite. Geokhimiia no. 3:252-257 '61. (MIRA 14:4

1. V.I. Vernadsky Institute of Geochemistry and Analytical
Chemistry, Academy of Sciences, U.S.S.R., Moscow.
                                (Danburite) (Datolite)

S/007/61/000/007/001/004
B103/B217

AUTHOR: Barsukov, V. L.

TITLE: Some problems of boron geochemistry

PERIODICAL: Geokhimiya, no. 7, 1961, 561-572

TEXT: The author discusses data published on the boron content in
ultrabasic, basic, intermediate, and acid intrusive rocks, and states
that this classification of eruptives does not always correctly reflect
the content of individual elements in the rock types mentioned. Besides,
the alteration degree of the original composition of rocks by superimposed
postmagmatic processes is often neglected in the determination of the
average boron content. Boron is, however, mostly subjected to an
extensive redistribution by which its total content is considerably
changed. Thus, the evaluation of the average Clarke content for solving
problems of the metallogenic specialization of intrusives and for
studying the genetic interrelation between mineralization and intrusions
is complicated. Since the deposits of endogenic borates are genetically
bound to granitoids, the author analyzed granitoid samples: (A) from six

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Some problems of boron ...

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intrusive massifs hardly affected by secondary postmagmatic alterations which did not contain any secondary boron minerals, and to which no boron occurrences are bound. $1 \cdot 10^{-3}$,% B_2O_3 was found in these samples; (B) from four granitoid massifs which are genetically interrelated to deposits of hypogenic borates. Here, the boron content amounted to the 8-15fold. The names of the occurrences are not mentioned. Therefrom the author assumes a markedly metallogenic specialization of intrusions and divides them into (I) "boron-containing", and (II) "not boron-containing" ones. Intrusions with a boron content surpassing that of Clarke by the 8-15fold belong to group (I), intrusions with a boron content equal to that of Clarke or lower belong to group (II). The author states that the main part of the boron content is concentrated in feldspar, i.e., much more in plagioclase than in potash feldspar. The reasons of this selective boron concentration are disputed (V.L. Barsukov, Ref. 6: Geokhimiya.No.7, 1958; Ref.7,ibid.No.5, 1960; V.I.Lebedev, Ref.23,ibid.No.5, 1960; N.V. Belov,Ref.24:ibid.No.5, 1960). For the intrusions cf group (I), the author establishes two secondary alteration processes which did not occur simultaneously: (1) an earlier high-temperature albitization of potash

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feldspars and sericitization of the plagioclases, the sericitization degree directly depending on the intensity of albitization. The sericitization is assumed to be connected with the displacement of potassium when potash feldspar is replaced by albite, whereas potassium, for its part, causes a displacement of calcium from plagioclase. These reactions occur under alkaline conditions. This is proved by the sodium admixture. Boron occurs as isomorphous admixture in plagioclase, but not in sericite. The main part of boron contained in the rock is concentrated in plagioclase. Therefrom the author concludes that boron is separated from the crystal lattice during the sericitization of plagioclase and mobilized by the alkaline hydrothermal solution flowing by. Though a reduced boron content was proved with progressing sericitization, precise quantitative data are lacking. (2) Later, a new secondary alteration process of granitoids occurs (probably at lower temperatures): the rock is traversed by numerous microveins of epidote chlorite quartz (sometimes with calcite), from hair to centimeter width. Beside the microveins, the rock is colored red in their manifold width. Potash feldspar is more pelitized than sericitized. In this second state (in contrast to (1), alkaline stage), strong alkalis (K) are separated from the rock, whereas weak bases (Ca)

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are introduced. The author assumes that the solutions circulating at that time are weakly acid, almost neutral (bicarbonate- or rather chloride-bicarbonate-calcium solutions). Thus, the initial stage of so-called "acidic leaching" of rocks begins now on greater areas (D.S. Korzhinskiy, Ref. 10: Ocherk metasomaticheskikh protsessov (Outlines of metasomatic processes), published by AS USSR,M.,1953). The different chemical conditions of the two processes probably also influence the conditions of further migrations and concentrations of solutions, which differ in each individual case. The author detects that boron in the form of volatile fluorides cannot be mobilized by alkaline hydrothermal solutions from the rock. Fluorine is, however, often brought into the deposits of hypogenic borates. It is fixed in minerals of the humite group, which replace forsterite and are paragenetically closely connected with borates. M. V. Akhmanova and G. Ye. Kuril'chikova (Ref. 15: Zh. neorg.khimii, in print) studied, as one of the most probable forms in which boron is transported by hydrothermal solutions, the salts $H[B(F,OH)_4]$ and $Na[B(F,OH)_4]$ of hydroxo-fluoboric acid by means of infrared spectroscopy with the result that the tetraborate ion (I.Takeuchi,

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Some problems of boron ...

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Ref. 16: Mineralogical J. 2, No.4,p.245,1958) is the predominant, most stable boron form in such solutions. The author assumes the hydrolysis of the tetraborate ion in two molecules

$$H_3BO_3 \ (HO-B{<}^{OH}_{OH} \ ) \ \text{and two ions of} \ B \ (OH)_4^-$$
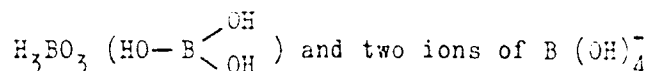
whose structure is similar to that of the metaborate ion. He believes the conversion reactions with the carbonate rocks (alumosilicates) to cause the boron precipitation from the hydrothermal solutions. If these rocks are similar to granitoids, tourmaline will precipitate at higher temperatures. In the further course of the hydrothermal process alkalinity and temperature drop, the solutions approach neutrality, and the process enters the "acidic" stage. Many of the various reasons of the intensity and the extent of this stage are not yet clarified. The author assumes that the boron transport now takes place in the form of orthoborates (BO_3^{3-}) or as $B_2O_5^{4-}$. By interaction between boron-containing solutions of this stage and magnesium carbonates. boron precipitates, crystallizes, however, not as magnesium orthoborate but as diborate (ascharite). By

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Some problems of boron ...

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further increase of alkalinity BO_3OH^{4-} is formed from (BO_3^{3-}), in which boron is bound in a datolite structure. Danburite, later also datolite, are formed, as a rule, by interaction with calcium solutions. The author mentions papers by: A.P. Vinogradov, Ye. F. Mel'nitskaya, M. G. Valyashko, and O. K. Yanat'yeva. There are 10 figures, 6 tables, and 24 references: 19 Soviet-bloc and 5 non-Soviet-bloc. The three references to English-language publications read as follows: S.R. Nockolds, R. Allen, Geochim.et Cosmochim. Acta, 4, 105, (1953); 5 (1954); I.I. Hemly (Ref.11:Amer.J.Sci. 257,p.241,1959); the 3rd one is given in the body of the abstract.

ASSOCIATION: Institut geokhimii i analiticheskoy khimii im. V. I.
               Vernadskogo AN SSSR, Moskva (Institute of Geochemistry and
               Analytical Chemistry imeni V. I. Vernadskiy AS USSR, Moscow)

SUBMITTED: December 27, 1960

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S/081/61/000/020/023/089
B138/B110

AUTHOR: Barsukov, V. L.

TITLE: Geochemistry of hypogenetic boron

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 20, 1961, 88, abstract
             20G11 (Sb. "Geokhim. tsikly". M., Gosgeoltekhizdat, 1960,
             137-145) .

TEXT: All hypogenetic deposits of B are consanguinous with intrusive
granitoids, granites and rocks of granoido-syenite composition, in which
plagioclase is the principal B-carrier. The interaction of ore-bearing
solutions with alumosilicate rocks similar in composition to granitoids
promotes the creation of hypogenetic concentrations of B (tourmalinization,
axinitization). The process of the formation of deposits of hypogenetic
borates, which are confined to magnesial skarns, also creates high B
concentrations. The primary hypogenetic borates, lüdwigite and kotoite,
are formed from alkaline solutions, against a background of reduced
alkalinity, as a result of interaction with previously formed skarns. It
is the difference in the structure of the borate ions in hypogenetic and

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Geochemistry of hypogenetic boron

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exogenetic conditions which determines the different composition of the cations, which are the B carriers. In hypogenetic conditions they are Fe^{3+} and Mg^{2+}, and in exogenetic, Na^+, Ca^{2+} and Mg^{2+}. The reduction in the temperature and in alkalinity of the boron-bearing solutions which accompanies increased CO_2 concentration causes asharitization of the primary borates. Migration of B with alkaline and relatively "acid" (neutral or weakly alkaline) solutions will either lead to the formation of separate deposits, or it will appear at the same time, causing a variety of borate mineralizations. [Abstracter's note: Complete translation.]

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BARSUKOV, V.L.

Some problems in the geochemistry of boron. Geokhimiia no.7:561-572
'61.   (MIRA 14:6)

1. V.I.Vernadskiy Institute of Geochemistry and Analytical Chemistry,
Academy of Sciences U.S.S.R., Moscow.
                    (Boron) (Geochemistry)

BARSUKOV, V. L.

"Geochemistry of hypogenus boron"

Paper submitted at the International Geological Congress XXI Session - 1960 (Reports of Soviet Geologists) Problem No. 1, 15-24 Aug. 61

V. L. BARSUKOV (USSR)

"On the metallogenic specification of granitoids intrusion."

Report presented at the Conference on Chemistry of the Earth's Crust,
Moscow, 14-19 Mar 63.

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    ZNAMENSKIY, V.L., red.izd-va; VINOGRADOV, A.P.,akademik, red;
    POLYAKOVA,T.V.,tekhn.red.

[Essential features of uranium geochemistry]·Osnovnye cherty
geokhimii urana. Pod red. A.P.Vinogradova. Moskva, Izd-vo
AN SSSR, 1963. 350 p.   (MIRA 16:10)

1. Akademiya nauk SSSR. Institut geokhimii i analiticheskoy
khimii.
                    (Uranium)

BARANOV, V.I.; BARSUKOV,V.L.; IVANOVA, V.P., HELMSTEIN, V.K.; SURKOV, Yu.A.; Kandidat fiz.-mat. nauk, otv. red.

[Neutron methods of research and analysis of boron-containing raw materials] Neitronnye metody poiskov i analiza bornovo syr'ia. [g V.I.Baranov i dr.] Moskva, Izd-vo "Nauka," 1964. 114 p.   (MIRA 17:11)

BARSUKOV, M. I.

PA 13/49T77

USSR/Medicine - Public Health,   Jul/Aug 48
                    History
    Medicine - Public Health, Associations

"Fifth All-Union Convention of Councils and
Foundations of the People's Commissariat for Public
Health RSFSR," M. I. Barsukov, Inst for the
Orgn of Pub Health and History of Medicine, Acad Med
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Describes foundation of People's Commissariat for
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13/49T77

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Health and Progress in Soviet Public Health,"
M. I. Barsukov, 7 pp

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21/49T60

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"V. I. Lenin and the Soviet Health Program," Sov. zdrav., No.2, 1949

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"The Problem of the Bolshevist Study of the History of Soviet Public Health
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27315 PARSUKOV, M. I. - Nikolay Aleksandrovich Semashko. (1874-1949 gg.) Fel'dsher I
        Akusherka, 1949, No 8, S. 29-34

SC: Ietopis' Zhurnal'nykh Statey, Vol. 36, 1949

BARSUKOV, M.I.

Workers' health protection in Soviet Union. Feldsher & akush.
no.4:3-14 Ap '50.   (CLML 19:2)

BARSUKOV, M.I., professor.

Review of R.B.Kaganovich's "From the history of tuberculosis control in pre-revolutionary Russia." Vest. AMN SSSR no.1:52-54 Ja-Mr '53.

(MLRA 6:7)

(Tuberculosis--Prevention) (Kaganovich, R.B.)

BARSUKOV, M.I., professor.

Problems of prevention in Z.P.Solov'ev's works; on the 25th anniversary
of his death.   Vest.AMN SSSR no.4:3-9 '53.   (MLRA 7:1)
           (Solov'ev, Zinovii Petrovich, 1876-1928) (Medicine, Preventive)

BARSUKOV, M.I.

Certain problems of theory and practice of Soviet public health
according to resolution of the 19th Congress of the Communist Party
of the Soviet Union. Sovet med. 17 no.5:5-11 May 1953. (CLML 24:5)

1. Professor. 2. Of the Institute of Public Health Organization and
History of Medicine imeni N. A. Semashko (Acting Director -- Ye. D.
Ashurkov), Academy of Medical Sciences USSR.